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EXAMINER

POWELL, A

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 04/06/00

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**Application No.  
**09/039,438**

Applicant(s)

**Shin, et al**

Examiner

**Powell, A.**

Group Art Unit

**1763**☒ Responsive to communication(s) filed on 1/20/00☒ This action is **FINAL**.☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**☒ Claim(s) 1-20 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.☒ Claim(s) 1-20 is/are rejected.☐ Claim(s) \_\_\_\_\_ is/are objected to.☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.**Application Papers**☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.☐ The specification is objected to by the Examiner.☐ The oath or declaration is objected to by the Examiner.**Priority under 35 U.S.C. § 119**☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).☒ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been☒ received.☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).**Attachment(s)**☐ Notice of References Cited, PTO-892☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 7, 12☐ Interview Summary, PTO-413☐ Notice of Draftsperson's Patent Drawing Review, PTO-948☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 19-20 are rejected under 35 U.S.C. 102(B) as being anticipated by Nelson.

Nelson discloses an etching process in which the etched product ( col. 4, line 38) is covered with an aqueous liquid and the resulting liquid is passed through an ion exchanger to remove the ions from the rinse liquid which is reused or discharged. The solids are removed from the etcher 2 via a stream 1 which passes into a rinse chamber 4. The rinse liquid stream 5 then goes through an ion exchanger means 11. A replenishing solution from the ion exchange means is combined with the stream of a bulk storage tank 20 going to the etcher 2. The bulk storage tank 20 has streams flowing to the etcher 2 for etching the product and to the ion exchange means 11 in order to regenerate the resin. (Fig. 1; col. 4, lines 49-68; col. 5, lines 35-55). The etcher 2 can be a spray etcher which would inherently have nozzles. The nozzles may entrain air or gas such as nitrogen in the flow of the etchant or act as a sparger creating bubbles. (col. 4, lines 40-41) Etchable material reads on glass substrate.

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***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson in view of Tittle.

Nelson is discussed above.

Nelson does not disclose expressly a temperature sensor.

Tittle et al disclose a process control system having a plurality of sensors for sensing various parameters. It would be obvious to a person of ordinary skill in the art that operating parameters for controlling the process may include temperature (abstract; col. 3, lines 65-68; col. 4, line 64- col. 5, line 10). A formula may be used to compute bath effectiveness. Any variation of the effectiveness triggers a responsive change. The change can be an etch stop.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine the chemical processing control system of Tittle with the etching apparatus of Nelson.

The motivation for doing so would have been to monitor, initiate corrective action and establish limits.

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Therefore, it would have been obvious to a person of ordinary skill in the art to combine Nelson with Tittle to obtain the invention as specified in claims 2, 7 and 10.

5. Claims 3-6, 8-9 and 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson in view of Jones et al and Tittle.

Nelson is discussed above.

Nelson does not disclose expressly a rinse and drying bath for the substrate, a temperature sensor, a concentration measuring device and an etching solution which includes HF.

As to claims 3-5, 9, 11-12 and 18, Jones et al disclose an chemical processing apparatus containing a plurality of treatment chambers having a dip chamber with filling pumps, a spray chamber which serves as a rinse chamber or a drying chamber (col. 2, lines 20-39 and 63-68; col. 3, lines 1-10).

As to claims 6 and 17, Jones et al disclose a cleaning and an etching solution containing hydrofluoric acid (col. 5, lines 49-60; col. 6, lines 33-35 and 51-54). Jones et al disclose cone-shaped bottom tanks (Figs. 6A-B).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine the chemical processing apparatus of Jones et al with the etching apparatus of Nelson.

The motivation for doing so would have been to provide a number of liquid treating operations such as etching for manufacturing semiconductor devices.

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Nelson and Jones et al do not disclose expressly a temperature sensor or a concentration measuring.

As to claims 13-16, Tittle et al is discussed above.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine the chemical processing control system of Tittle with the etching apparatus of Nelson and Jones et al.

The motivation for doing so would have been to monitor, initiate corrective action and establish limits.

Therefore, it would have been obvious to a person of ordinary skill in the art to combine Nelson with Jones et al and Tittle to obtain the invention as specified in claims 3-6, 8-9 and 11-18.

### ***Response to Amendment***

6. Applicant's arguments filed 1/20/00 have been fully considered but they are not persuasive.

As to the arguments pertaining to the glass substrate, Nelson discloses etchable material which reads on glass substrate.

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**


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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication should be directed to Alva C. Powell at telephone number (703) 305-0541.

  
ACP

4/4/00

JEFFRIE R LUND  
  
Primary Examiner  
AU1763